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SEARCH REQUEST FORM

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Art Unit: 1623 Phone Number 305-9643 Serial Number: 09/485,071
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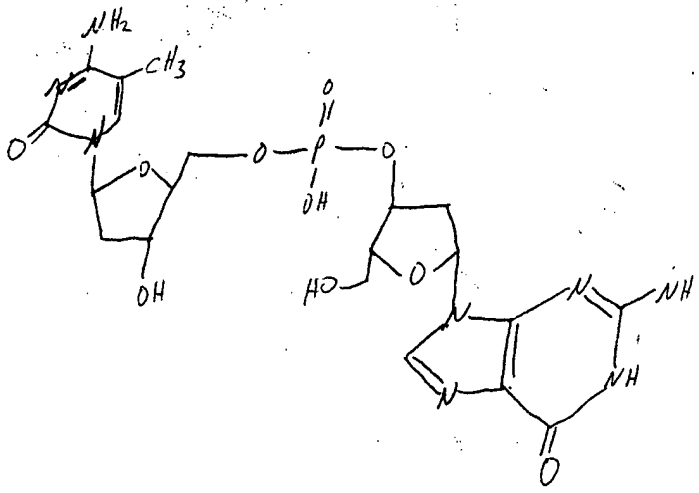
Title of Invention: Modulators of DNA Cytosine-5-methyl transferase and methods...

Inventors (please provide full names): Robert O. Reich ; James Flynn

Earliest Priority Filing Date: 8-29-1997

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*



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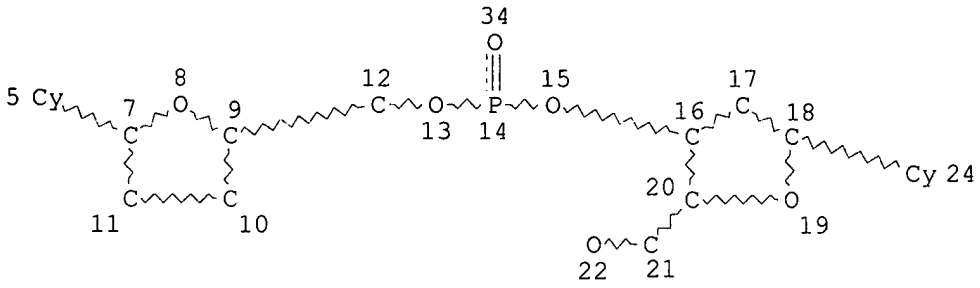

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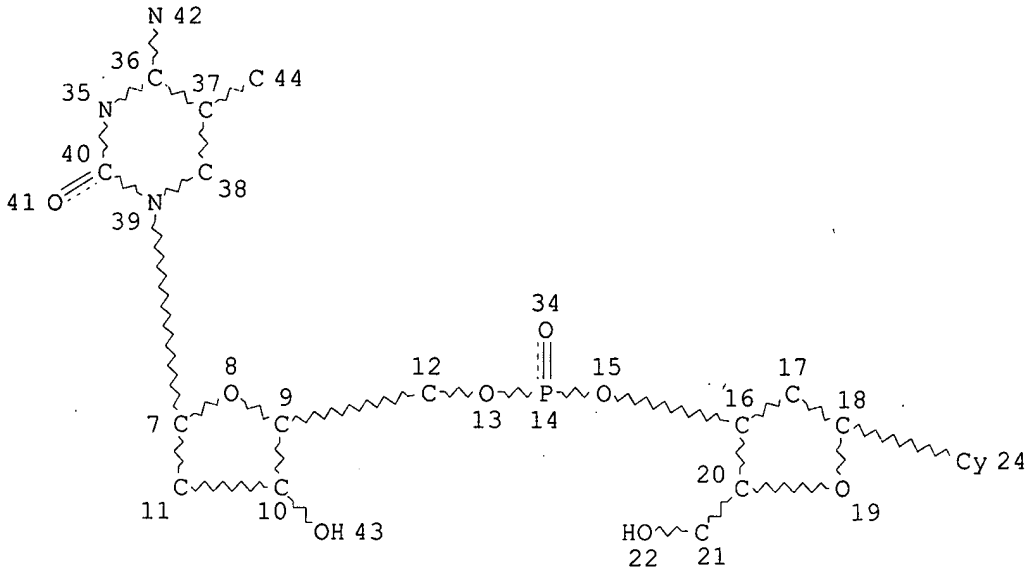

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L20 17 SEA FILE=HCAPLUS ABB=ON PLU=ON L19

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L20 ANSWER 1 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:871508 HCAPLUS
DOCUMENT NUMBER: 123:282316
TITLE: Methylation of the 5' CpG island of the p16/CDKN2 tumor suppressor gene in normal and transformed human tissues correlates with gene silencing
AUTHOR(S): Gonzalez-Zulueta, Mirella; Bender, Christina M.; Yang, Allen S.; Nguyen, TuDung; Beart, Robert W.; Van Tornout, Jan M.; Jones, Peter A.
CORPORATE SOURCE: USC/Norris Comprehensive Cancer Center, University of Southern California School of Medicine, Los Angeles, CA, 90033, USA
SOURCE: Cancer Research (1995), 55(20), 4531-5
CODEN: CNREA8; ISSN: 0008-5472
PUBLISHER: American Association for Cancer Research
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Loss of heterozygosity on 9p21, where the p16/CDKN2 tumor suppressor and the p15INK4B cell cycle regulator gases are located, is a common genetic alteration in bladder cancer. However, it has been difficult to demonstrate homozygous deletions and intragenic mutations in either of

these two genes in primary transitional cell carcinomas (TCC) of the bladder. Similarly, colon cancer-derived cell lines have shown no homozygous deletions of the p16/CDKN2 locus in contrast to a wide variety of tumor-derived cell lines. The authors have investigated abnormal methylation of the 5' CpG islands of the p16/CDKN2 and p15INK4B genes as an alternative mechanism of inactivation of these genes in bladder and colon cancers. De novo methylation of the 5' CpG island of p16/CDKN2 was obsd. in 12 of 18 (67%) uncultured bladder TCCs and in 2 of 3 (67%) bladder cell lines. In contrast, only 1 of 10 (10%) colon carcinomas showed methylation of the 5' CpG island of p16/CDKN2. It was striking to find that this region was extensively methylated and the gene not expressed in the normal colonic mucosa of 6 of 10 (60%) patients with colon cancer, whereas 5 of the corresponding colon tumors showed no methylation and high levels of p16/CDKN2 expression. The data show a significant correlation (two-sided) between the absence of p16/CDKN2 expression and methylation of its 5' CpG island in bladder tumors, cell lines, and normal colon mucosa. In contrast, no assocn. was obsd. between expression and methylation status of the 5' CpG island of p15INK4B. The results suggest that the p16/CDKN2 tumor suppressor gene may be inactivated by methylation of its 5' CpG island in TCCs of the bladder. The authors also present evidence of methylation of the 5' CpG island in this autosomal gene in normal colonic tissue.

IT **53078-95-8**
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
(of p16/CDKN2 suppressor gene in normal human colon and transitional cell carcinomas of bladder)

L20 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:70272 HCAPLUS
DOCUMENT NUMBER: 120:70272
TITLE: 5-Methylcytosine in genes with methylation-dependent regulation
AUTHOR(S): Volpe, Pietro; Iacovacci, Paolo; Butler, Richard H.; Eremenko, Tamilla
CORPORATE SOURCE: Department of Biology, University of Rome Tor Vergata', Rome, Italy
SOURCE: FEBS Letters (1993), 329(3), 233-7
CODEN: FEBLAL; ISSN: 0014-5793
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB An asym. distribution of deoxy-5-methylcytidylic acid-inhibiting restriction sites (dcm-sites) takes place in ten human genes regulated by 5-methylcytosine. These genes are dcm-site enriched upstream and dcm-site poor downstream. Along them, there is a scattering of hypermethylatable introns and hypomethylatable exons with a common code: the 5mCpG dinucleotides characterize promoters; Gp5mCs characterize introns; Tp5mCs and Cp5mCs are in small concns. in exons. Housekeeping genes contain more dcm-sites when compared with tissue-specific genes. This depends on the higher no. of dcm-sites in their promoters and introns. In exons, the relatively lower no. of dcm-sites is almost the same in both housekeeping and tissue-specific genes. Going from 5' to 3', the av. frequency of occurrence of these sites per nucleotide units decreases in introns and increases in exons. This difference is highly discriminated for tissue-specific and less discriminated for housekeeping genes.

IT **53078-95-8**
RL: BIOL (Biological study)
(introns contg., DNA methylation and transcriptional regulation in relation to)

L20 ANSWER 3 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:464805 HCAPLUS
DOCUMENT NUMBER: 119:64805
TITLE: Nuclear extracts of chicken embryos promote an active demethylation of DNA by excision repair of 5-methyldeoxycytidine
AUTHOR(S): Jost, Jean Pierre
CORPORATE SOURCE: Friedrich Miescher Inst., Basel, CH-4002, Switz.
SOURCE: Proceedings of the National Academy of Sciences of the United States of America (1993), 90(10), 4684-8
CODEN: PNASA6; ISSN: 0027-8424
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nuclear exts. of chicken embryos can promote the active demethylation of DNA. In hemimethylated DNA (i.e., methylated on one strand only), demethylation of 5mCpG occurs through nucleotide excision repair. The 1st step of demethylation is the formation of specific nicks 5' from 5-methyldeoxycytidine. Nicks are also obsd. in vitro on sym. methylated CpGs (i.e., methylated on both strands) but they result in breakage of the oligonucleotide with no repair. No specific nicks are obsd. on the nonmethylated CpG. Nicks are strictly 5mCpG-specific and do not occur on 5mCpC, 5mCpT, 5mCpA, or 6mApT. The effect of nonspecific nuclease(s) was ruled out. The nicking of mCpG takes place in the presence of 20 mM EDTA, irresp. of the nature of the sequence surrounding the 5mCpG. No methylcytosine glycosylase activity could be detected. The repair is aphidicolin and N-ethylmaleimide resistant, suggesting a repair action by DNA polymerase .beta.. In exts. of chicken embryos, the excision repair of mCpG is highest between the 6th and the 12th day of development, whereas it is barely detectable in nuclear exts. from different organs of adults. The possible implications of 5mCpG endonuclease activity in active demethylation of DNA during differentiation is discussed.
IT **53078-95-8**
RL: BIOL (Biological study)
(demethylation of and DNA nicking at, by chicken embryo nuclear exts.)

L20 ANSWER 4 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:181471 HCAPLUS
DOCUMENT NUMBER: 114:181471
TITLE: Two new photoaffinity polyamines appear to alter the helical twist of DNA in nucleosome core particles
AUTHOR(S): Clark, Elizabeth; Swank, Richard A.; Morgan, James E.; Basu, Hirak; Matthews, Harry R.
CORPORATE SOURCE: Dep. Biol. Chem., Univ. California, Davis, CA, 95616, USA
SOURCE: Biochemistry (1991), 30(16), 4009-20
CODEN: BICHAW; ISSN: 0006-2960
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Two new photoaffinity derivs. of polyamines have been synthesized by the reaction of spermine or spermidine with Me 4-azidobenzimidate. The new compds. were purified chromatog. and characterized by several methods including proton magnetic resonance spectroscopy. The spermine deriv. is N1-ABA-spermine [(azidobenzamidino)spermine], and the spermidine deriv. is a mixt. of N1- and N8-ABA-spermidine. ABA-spermine stabilizes nucleosome core particles in thermal denaturation expts., with similar but not identical effects when compared with the parent polyamine, spermine. In CD expts., ABA-spermine was capable of producing a B .fwdarw. Z transition in poly(dG-m5dC) at a concn. of 30 .mu.M, compared with 5 .mu.M required to produce the same effect with spermine. On the other hand, ANB-spermine [(azidonitrobenzoyl)spermine; Morgan, J. E., et al. stabilized the B form

of poly(dG-br5dC). ABA-spermine is a potent inhibitor of ornithine decarboxylase from Escherichia coli, giving 50% inhibition at 0.12 mM, while ANB-spermine is a modest inhibitor, comparable to spermine or spermidine. Under conditions of nitrogen-limited growth, yeast take up ABA-spermine and ABA-spermidine at approx. one-third to one-half the rate of spermidine or spermine. In contrast, ANB-spermine was not significantly taken up. The photoaffinity polyamines were used to photoaffinity label the DNA in nucleosome core particles, and the sites of labeling were detd. by exonuclease protection. All photoaffinity reagents showed both nonspecific labeling and specific sites of higher occupancy. However, the positions of the sites varied: the ANB-spermine sites confirmed those previously reported (Morgan et al., 1980); the ABA-spermine and ABA-spermidine sites were spaced at 9.8 base pair intervals from the 3' end of each DNA strand. This observation, together with the effect of spermine on the CD of DNA in nucleosome core particles, implies that polyamines alter the helical twist of DNA in nucleosome core particles. The ABA-polyamines are offered as general-purpose photoaffinity polyamine reagents.

IT **53078-96-9**
RL: PRP (Properties)
(conformation of, photoaffinity polyamine effect on)

L20 ANSWER 5 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1989:436068 HCAPLUS
DOCUMENT NUMBER: 111:36068
TITLE: Scanning tunnelling microscopy of Z-DNA
AUTHOR(S): Arscott, Patricia G.; Lee, Gil; Bloomfield, Victor A.; Evans, D. Fennell
CORPORATE SOURCE: Dep. Biochem., Univ. Minnesota, St. Paul, MN, 55108, USA
SOURCE: Nature (London, United Kingdom) (1989), 339(6224), 484-6
CODEN: NATUAS; ISSN: 0028-0836
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Scanning tunnelling microscopy images are presented for poly(dG-me5dC).cntdot.poly(dG-me5dC) in the Z-form. Both the general appearance of the fibers and measurements of helical parameters are in good agreement with models derived from x-ray diffraction.

IT **53078-95-8**
RL: ANST (Analytical study)
(double-stranded, Z-form of, scanning tunnelling microscopy of)

L20 ANSWER 6 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1989:402886 HCAPLUS
DOCUMENT NUMBER: 111:2886
TITLE: Structural alteration from non-B to B-form could reflect DNase I hypersensitivity
AUTHOR(S): Ramesh, N.; Brahmachari, Samir K.
CORPORATE SOURCE: Mol. Biophys. Unit, Indian Inst. Sci., Bangalore, 560 012, India
SOURCE: Journal of Biomolecular Structure & Dynamics (1989), 6(5), 899-906
CODEN: JBSDD6; ISSN: 0739-1102
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Preferential cleavage of active genes by DNase I has been correlated with a structurally altered conformation of DNA at the hypersensitive site in chromatin. To gain understanding of the structural requirements for gene activation as probed by DNase I action, DNase I digestion of synthetic

polynucleotides capable of adopting B and non-B conformation (like Z-form) was studied. B-form polynucleotides were more readily digested. Left handed Z form DNA present within a natural sequence in supercoiled plasmid showed marked resistance towards DNase I digestion. Alternating purine-pyrimidine sequences adopting Z-conformation exhibited DNase I foot printing even in a protein free system. The results indicate that (1) altered structure like Z-DNA is not a favorable substrate for DNase I, (2) both ends of the alternating purine-pyrimidine insert showed hypersensitivity, (3) B-form with a minor groove of 12-13 .ANG. is a more favorable substrate for DNase I than an altered structure, (4) any DNA structures deviating largely from B form with a capacity to flip over to the B-form are potential targets for the DNase I enzymic probes in naked DNA.

IT **53078-96-9**
RL: BIOL (Biological study)
(DNase I sensitivity of, B-form and Z-form conformation effect on)

L20 ANSWER 7 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1987:632010 HCAPLUS
DOCUMENT NUMBER: 107:232010
TITLE: Enzymic incorporation of modified nucleosides into oligoribonucleotides
AUTHOR(S): Zhenodarova, S. M.; Klyagina, V. P.; Sedel'nikova, E. A.; Smolyaninova, O. A.; Soboleva, I. A.; Khabarova, M. I.; Gulyaeva, V. I.; Frolova, N. M.
CORPORATE SOURCE: Inst. Biol. Phys., Pushchino, USSR
SOURCE: Bioorganicheskaya Khimiya (1987), 13(8), 1037-44
CODEN: BIKHD7; ISSN: 0132-3423
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB The incorporation of modified nucleosides (tRNA components) and their analogs into oligonucleotides by a variety of RNases which differed in their substrate specificities, by polynucleotide phosphorylases, and by phage T4 RNA ligase was investigated. Pseudouridine, dihydrouridine, ribothymidine, 5-methylcytidine, inosine, and 6-methyladenosine could be incorporated by most of the RNases tested, including RNases Pb2, Pcl2, Pb1, Pch1, C2, T1, and A. 3-Methylcytidine and 4-acetylcytidine generally functioned as phosphate acceptors with the guanyl-specific RNases, whereas 1-methyladenosine was incorporated by RNase Pcl2. 7-Methylguanosine and 1-methylguanosine 2',3'-cyclophosphates could serve as phosphate donors with RNase Pb2. 6-Isopentenyladenosine did not act as a phosphate acceptor for RNase Pb2.

IT **65676-43-9P 65676-46-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

L20 ANSWER 8 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1987:596292 HCAPLUS
DOCUMENT NUMBER: 107:196292
TITLE: Specificity of monoclonal anti-Z-DNA antibodies from unimmunized MRL/Mp-1pr/1pr mice
AUTHOR(S): Bergen, H. Robert, III; Losman, Michele J.; O'Connor, Timothy; Zacharias, Wolfgang; Larson, Jacquelynn E.; Accavitti, Mary Ann; Wells, Robert D.; Koopman, William J.
CORPORATE SOURCE: Dep. Med., Univ. Alabama, Birmingham, AL, 35294, USA
SOURCE: Journal of Immunology (1987), 139(3), 743-8
CODEN: JOIMA3; ISSN: 0022-1767
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Antibodies reactive with left-handed Z-DNA arise spontaneously in the sera of patients with systemic lupus erythematosus and rheumatoid arthritis and in autoimmune MRL mice. Here, the authors characterized 4 monoclonal anti-Z-DNA antibodies from unimmunized MRL/Mp-1pr/1pr mice that do not cross-react with B-DNA and can discriminate between different types of left-handed helices. Two of the monoclonal antibodies (Za and Zi) behaved similarly in that they bound to 2 forms of Z-DNA (Br-poly(dG-dC).poly(dG-dC) and AAF-poly-(dG-dC).poly(dG-dC)) but not to 2 other Z-form DNA (poly(dG-5BrdC).poly(dG-5BrdC) or poly(dG-5-MedC).poly(dG-5MedC)). Neither antibody (Za or Zi) bound significantly to B-DNA or to denatured DNA. A third antibody (Ze) exhibited similar binding characteristics for the Z-DNA prepns., but also recognized denatured DNA. In contrast, a fourth antibody (3-7.3) bound preferentially to poly(dG-5BrC).poly(dG-5BrdC) in Z conformation. These results provide the first evidence for anti-Z-DNA autoantibodies in autoimmune mice that do not cross-react with native or denatured DNA and indicate that these antibodies exhibit considerable heterogeneity in their fine binding specificity.

IT **53078-96-9P**
RL: PREP (Preparation)
(double-stranded, prepn. and autoantibodies to Z DNA binding to, specificity of)

L20 ANSWER 9 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1987:29492 HCAPLUS
DOCUMENT NUMBER: 106:29492
TITLE: Vacuum ultraviolet circular dichroism of double stranded nucleic acids
AUTHOR(S): Sutherland, John C.; Lin, Bohai; Mugavero, JoAnn; Trunk, John; Tomasz, Maria; Santella, Regina; Marky, Luis; Breslauer, Kenneth J.
CORPORATE SOURCE: Biol. Dep., Brookhaven Natl. Lab., Upton, NY, 11973, USA
SOURCE: Photochemistry and Photobiology (1986), 44(3), 295-301
CODEN: PHCBAP; ISSN: 0031-8655
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The vacuum-UV CD (VUV-CD) of double-stranded DNA and RNA is greater in amplitude than the CD of these mols. for wavelengths longer than 200 nm. The amplitude of the VUV-CD depends on the base compn. of DNA, with guanine-cytosine base pairs contributing more intensity than adenine-thymine base pairs. The shape and amplitude of the VUV-CD are better indicators of nucleic acid conformation (A, B, or Z) than are those of the longer wavelength CD. The unique features are illustrated of VUV-CD with specific examples. In the presence of Cs and EtOH, VUV-CD reveals that poly(dA-dC).cntdot.poly(dG-dT) forms a right handed double helix despite the inversion of the longer wavelength CD, which usually is used as a benchmark for the left-handed form. The greater magnitude of the VUV-CD of DNA and RNA compared to longer wavelengths means that the VUV-CD is less susceptible to distortion by the induced CD of UV-absorbing ligands like mitomycin C and N-2-acetylaminofluorene.

IT **53078-96-9**
RL: ANST (Analytical study)
(double-stranded, conformation of, detn. of, by vacuum-UV CD)

L20 ANSWER 10 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1986:402613 HCAPLUS
DOCUMENT NUMBER: 105:2613
TITLE: Nucleoside antimetabolites in the synthesis of the internucleotide bond catalyzed by ribonucleases
AUTHOR(S): Zhenodarova, S. M.; Soboleva, I. A.; Khabarova, M. I.

CORPORATE SOURCE: Inst. Biol. Fiz., Pushchino, USSR
SOURCE: Nukleazy: Biol. Rol Prakt. Ispol'z. (1985), 25-8. Editor(s): Berdyshev, G. D.; Khursin, N. E. Naukova Dumka: Kiev, USSR. CODEN: 54IIAL
DOCUMENT TYPE: Conference
LANGUAGE: Russian
AB The effect of structure on the ability of analogs of natural nucleosides (5-substituted derivs. of 2'-deoxyuridine and 2'-deoxycytidine, 1-.beta.-arabinosylcytidine, and virazole) to serve as acceptors in RNase-catalyzed phosphate bond formation with cAMP or cGMP was investigated. No correlation was found between ability of these compds. to serve as substrates in the reaction and the changes in electron d. or ionization consts. of the bases caused by substitution of the H atom in the 5 position with a Me group or halides, even though there were indications that these factors affected the interaction of these compds. with the enzyme. Apparently, the differences in the ability of these compds. to act as substrates in the RNase-catalyzed synthetic reaction are due mainly to steric effects.
IT **65676-46-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, RNase as catalyst for)

L20 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1986:163844 HCAPLUS
DOCUMENT NUMBER: 104:163844
TITLE: Vacuum UV CD of the low-salt Z-forms of poly(rG-dC).cntdot.poly(rG-dC), and poly(dGm5dC).cntdot.poly(dG-m5dC)
AUTHOR(S): Behe, Michael J.
CORPORATE SOURCE: Dep. Chem., City Univ. New York, Flushing, NY, 11367, USA
SOURCE: Biopolymers (1986), 25(3), 519-23 CODEN: BIPMAA; ISSN: 0006-3525
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The vacuum CD spectra of poly(rG-dC).poly(rG-dC) and poly(dG-m5dC).poly(dG-m5dC) (m5dC = 5-methyldeoxycytidylate) have been obtained for the low-salt Z-conformations on both polymers. The spectra are very similar to those for the high-salt Z-forms. This behavior is consistent with the suggestion that the low- and high-salt Z-forms are comprised of different proportions of ZI- and ZII-conformations.
IT **53078-96-9**
RL: BIOL (Biological study)
(double-stranded, CD of low-salt Z forms of)

L20 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1985:402719 HCAPLUS
DOCUMENT NUMBER: 103:2719
TITLE: Synthesis of guanylyl (3' .fwdarw. 5')-5-methylcytidine (Gpm5C), a dinucleoside monophosphate which is unable to function as a primer in the synthesis of RNA by the influenza A virus RNA polymerase
AUTHOR(S): Khan, Zainub; Ariatti, Mario; Hawtrey, Arthur
CORPORATE SOURCE: Dep. Biochem., Univ. Durban-Westville, Durban, 4000, S. Afr.
SOURCE: Nucleosides & Nucleotides (1984), 3(1), 69-76 CODEN: NUNUD5; ISSN: 0732-8311
DOCUMENT TYPE: Journal

LANGUAGE: English
AB Guanylyl-(3'.fwdarw.5')-5-methylcytidine (Gpm5C) was synthesized enzymically by the use of RNase T1 at high enzyme diln. In contrast with GpC, the methylated dinucleoside monophosphate was inactive as a primer for RNA synthesis by RNA-dependent RNA polymerase (RNA replicase) of influenza A virus. However, in expts. where Gpm5C was added with either GpC or ApG at the start of the reaction, the methylated nucleoside monophosphate inhibited the incorporation of [3H]CTP into RNA to a considerable extent; in the case of ApG plus Gpm5C, the obsd. inhibition was .apprx.85%, whereas with GpC plus Gpm5C, the inhibition was 95%. These findings on the inhibition of influenza A virus RNA formation by Gpm5C suggest the design and synthesis of useful drugs of this type as possible agents for interfering with the replication of influenza A virus.
IT **96751-86-9P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and RNA replicase of influenza A virus inhibition by)

L20 ANSWER 13 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1983:589973 HCAPLUS
DOCUMENT NUMBER: 99:189973
TITLE: Adriamycin inhibits the B to Z transition of poly(dGm5dC).cntdot.poly(dGm5dC)
AUTHOR(S): Chen, Chiwan; Knop, Richard H.; Cohen, Jack S.
CORPORATE SOURCE: Lab. Theor. Phys. Biol., Natl. Inst. Child Health Human Dev., Bethesda, MD, 20205, USA
SOURCE: Biochemistry (1983), 22(24), 5468-71
CODEN: BICHAW; ISSN: 0006-2960
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Adriamycin inhibited the Mg2+-induced B-to-Z conformational transition of poly(dGm5dC).cntdot.poly(dGm5dC) and reduced the degree of cooperativity of the transition. Addnl., adriamycin alone converted the Z-form to the B-form in a cooperative manner. These results indicate that adriamycin binds preferentially to the B-form, which could be relevant to its mode of cytotoxic action.
IT **53078-96-9**
RL: BIOL (Biological study)
(double-stranded, B-to-Z conformational transitions of, adriamycin effect on)

L20 ANSWER 14 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1983:211704 HCAPLUS
DOCUMENT NUMBER: 98:211704
TITLE: B-Z transition in methylated DNA. A quantum-chemical study
AUTHOR(S): Van Lier, Johan J. C.; Smits, Marieke T.; Buck, Henk M.
CORPORATE SOURCE: Dep. Org. Chem., Eindhoven Univ. Technol., Eindhoven, Neth.
SOURCE: Eur. J. Biochem. (1983), 132(1), 55-62
CODEN: EJBCAI; ISSN: 0014-2956
DOCUMENT TYPE: Journal
LANGUAGE: English
AB On the basis of modified neglect of differential overlap (MNDO) quantum-chem. calcns. on nucleoside systems, the effect of methylation on the energies calcd. for the rotation around the glycosidic C(1')-N bond is described. There is a high anti-syn activation energy in the case of the pyrimidine nucleosides cytidine and 5-methylcytidine (m5C), whereas for the purine nucleosides guanosine, 6-methylguanosine, 7-methylguanosine, and 8-methylguanosine (m8G) only moderate anti-syn energetic barriers were

calcd. This result is consistent with the exptl. obsd. preference for d(G-C)2, d(G-C)3, and d(G-m5C)3 duplexes to adopt Z-DNA structures, in which the syn conformation of guanine is favored. Enhanced anti-syn activation energy with respect to the unmethylated deriv. was calcd. in the cases of m5C and m8G. This result is rationalized on the basis of steric and electronic factors. In addn., an increased stabilization of the syn conformer due to selective methylation of guanine was calcd. The data obtained are in good correspondence with the exptl. obsd. B-Z transition in synthetic methylated DNA duplexes with alternating dC-dG sequence. The work concerning the initiating step in the B-Z transition which involves rotation around the C(4')-C(5') bond induced by P(V) trigonal bipyramidal intermediates, is discussed. In combination with the rotation around the glycosidic C(1')-N bond, it can be shown that the phosphate within the dpC structure is selectively activated.

IT **53078-95-8 85819-77-8 85819-78-9**
85819-79-0
RL: PRP (Properties)
(B-Z conformational transition of, methylation in relation to)

L20 ANSWER 15 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1978:100809 HCAPLUS
DOCUMENT NUMBER: 88:100809
TITLE: Step-wise oligonucleotide synthesis. XXIV. The 5-substituted pyrimidine nucleosides as phosphate acceptors in the synthesis of internucleotide bonds catalyzed by ribonucleases of different specificity
AUTHOR(S): Zhenodarova, S. M.; Sedel'nikova, E. A.; Smolyaninova, O. A.; Soboleva, I. A.; Khabarova, M. I.
CORPORATE SOURCE: Inst. Biol. Phys., Pushchino, USSR
SOURCE: Bioorg. Khim. (1977), 3(11), 1479-83
CODEN: BIKHD7
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB Dinucleoside monophosphates (CpN, GpN, and ApN) were synthesized from nucleoside 2',3'-cyclic phosphates and 5-substituted pyrimidine nucleosides (5-methyldeoxycytidine, 5-bromodeoxycytidine, 5-iododeoxycytidine, 5-methyluridine, 5-methyldeoxyuridine, 5-fluorodeoxyuridine, 5-azacytidine) with the participation of RNase A, RNase T1 and Penicillium brevicompactum RNase. The effects caused by the substituents in the position 5 of phosphate acceptors were different for RNases of different substrate specificity. Apparently, the RNases used differ in the arrangement of contact sites for phosphate acceptors.

IT **65676-43-9 65676-46-2**
RL: FORM (Formation, nonpreparative)
(formation of, by RNase)

L20 ANSWER 16 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1974:142016 HCAPLUS
DOCUMENT NUMBER: 80:142016
TITLE: Physical studies on synthetic DNA containing 5-methylcytosine
AUTHOR(S): Gill, James E.; Mazrimas, Joseph A.; Bishop, Clyde C., Jr.
CORPORATE SOURCE: Lawrence Livermore Lab., Univ. California, Livermore, CA, USA
SOURCE: Biochim. Biophys. Acta (1974), 335(3), 330-48
CODEN: BBACAQ
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The absorption spectra of poly(dI) .cntdot. poly(m5dC) and poly(dI-m5dC)

.cntdot. poly(dI-m5dC) closely resembled the spectra of an equimolar mixt. of nucleotides; the maxima near 250 nm corresponded to dIMP absorption and the shoulder at 278 nm corresponded to 5-methyldeoxyCMP absorption. In contrast, when dIMP was replaced by dGMP, the maxima remained near 250 nm, but there was no shoulder; the pyrimidine absorption appeared to be blue-shifted by approx. 28 nm. The fluorescence of 5-methyldeoxy-CMP was unperturbed when incorporated into random-coil poly(m5dC) and was blue-shifted by approx. 8 nm when incorporated into poly(dI-m5dC) .cntdot. poly(dI-m5dC). Incorporation of 5-methyldeoxy-CMP into poly(dG-m5dC) .cntdot. poly(dG-m5dC) reduced the fluorescence yield several-fold and blue-shifted the emission by approx. 50 nm. Methylation of pyrimidines raised the melting temp. of both poly(dR-dY) .cntdot. poly(dR-dY) poly(dR) .cntdot. poly(dY) and reversed the order of melting: methylation and bromination gave the homopolymer pair a higher melting temp. than the alternating copolymer. Methylation also invariably reduced the buoyant d. of the synthetic DNAs in neutral and alk. CsCl, but the decrement was not const. Methylation of poly(dI-dC) also reduced its buoyant d. in neutral and alk. Cs2SO4. Methylation of poly(dG-dC) increased its buoyant d. in nuetral Cs2SO4 and reduced it in alk. Cs2SO4.

IT **53078-96-9**
RL: PRP (Properties)
(fluorescence of)

IT **53078-94-7**
RL: PRP (Properties)
(phys. properties of)

L20 ANSWER 17 OF 17 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1964:53855 HCAPLUS
DOCUMENT NUMBER: 60:53855
ORIGINAL REFERENCE NO.: 60:9517e-g
TITLE: Column chromatography of oligonucleotides from amino acidtransfer ribonucleic acid
AUTHOR(S): Staehelin, M.
CORPORATE SOURCE: CIBA Ltd., Basel, Switz.
SOURCE: Biochem. J. (1963), 89(1), 2P
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB Analysis of the oligonucleotides obtained from enzymic digests of ribonucleic acid (RNA) shows non-randomness of the base distribution. Sol. RNA yields the dinucleotides: adenosine-pseudouridine, guanylpseudouridine, 2-dimethylguanylcytidine, 2-dimethylguanylpseudouridine, guanylthymine riboside, guanyl-5-methylcytidine, and a trinucleotide, 1-methylguanyl-2-methylguanylcytidine equal in amts. to those of the normal trinucleotide adenylyladenylylcytidine and twice as frequent as adenylyladenylylpseudouridine. Sequences of purified fractions have shown great differences among the individual sol. RNA chains. Guanyl5-methyleytidine occurred in stoichiometric amts. in a sol. RNA fraction 21-fold enriched in serine-incorporating activity; adenyl-adenylyluridine was lacking.

IT **96751-86-9**, Cytidine, guanylyl-(3'.fwdarw.5')-5-methyl-
96751-86-9, Guanosine, 5-methylcytidylyl-(5'.fwdarw.3')-
(formation from amino acid-transfer ribonucleic acid)

=> file caold
FILE 'CAOLD' ENTERED AT 15:24:10 ON 20 NOV 2002

FILE COVERS 1907-1966
FILE LAST UPDATED: 01 May 1997 (19970501/UP)

This file contains CAS Registry Numbers for easy and accurate substance identification. Title keywords, authors, patent assignees, and patent information, e.g., patent numbers, are now searchable from 1907-1966. TIFF images of CA abstracts printed between 1907-1966 are available in the PAGE display formats.

This file supports REGlstRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

=> s l19
L21 1 L19

=> d all

L21 ANSWER 1 OF 1 CAOLD COPYRIGHT 2002 ACS
AN CA60:9517e CAOLD
TI column chromatography of oligonucleotides from amino acid-transfer ribonucleic acid
AU Staehelin, Matthys
IT 10049-46-4 27706-19-0 32455-04-2 39797-94-9 **96751-86-9** 105432-15-3

=> file reg
FILE 'REGISTRY' ENTERED AT 15:24:38 ON 20 NOV 2002
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 18 NOV 2002 HIGHEST RN 473870-51-8
DICTIONARY FILE UPDATES: 18 NOV 2002 HIGHEST RN 473870-51-8

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

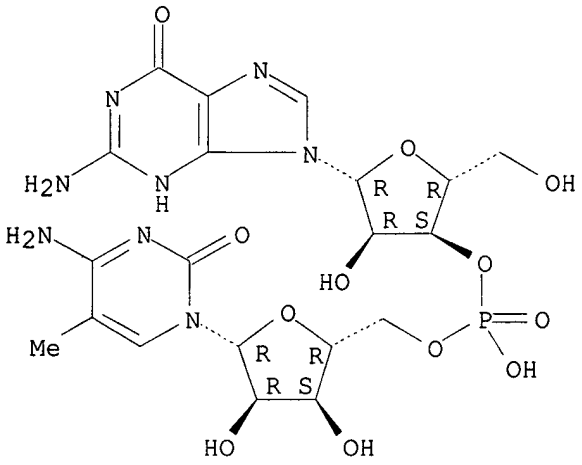
Experimental and calculated property data are now available. See HELP PROPERTIES for more information. See STNote 27, Searching Properties in the CAS Registry File, for complete details:
http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf

=> d ide can l19 tot

L19 ANSWER 1 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 96751-86-9 REGISTRY
CN Cytidine, guanylyl-(3'.fwdarw.5')-5-methyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Guanosine, 5-methylcytidylyl-(5'.fwdarw.3')- (7CI)

FS STEREOSEARCH
MF C20 H27 N8 O12 P
LC STN Files: CA, CAOLD, CAPLUS

Absolute stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

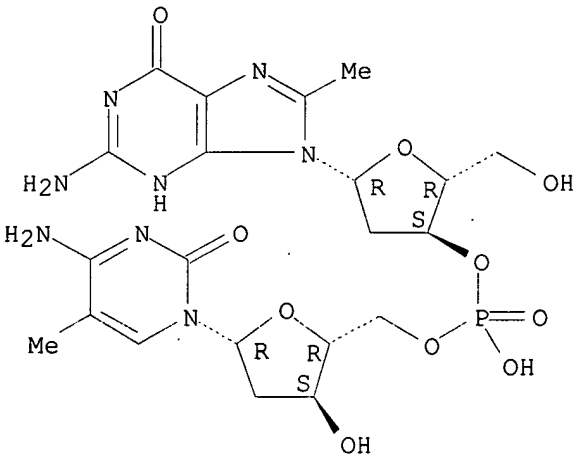
2 REFERENCES IN FILE CA (1962 TO DATE)
2 REFERENCES IN FILE CAPLUS (1962 TO DATE)
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 103:2719

REFERENCE 2: 60:53855

L19 ANSWER 2 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 85819-79-0 REGISTRY
CN Cytidine, 2'-deoxy-8-methylguanylyl-(3'.fwdarw.5')-2'-deoxy-5-methyl-
(9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Guanosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-2'-deoxy-8-methyl-
FS STEREOSEARCH
MF C21 H29 N8 O10 P
LC STN Files: CA, CAPLUS

Absolute stereochemistry.



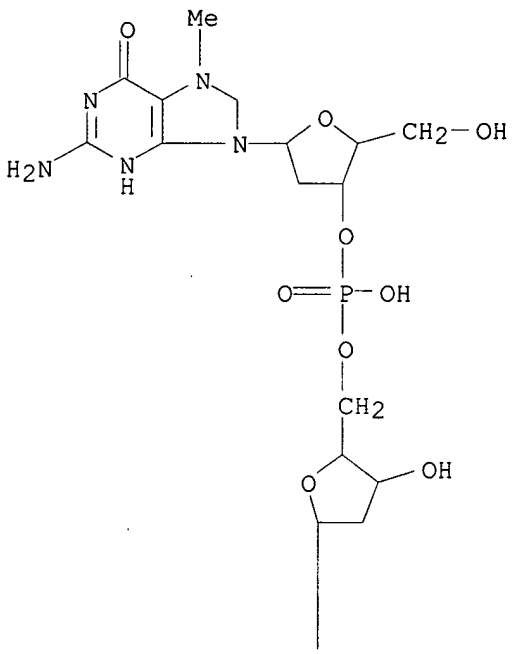
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 98:211704

L19 ANSWER 3 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 85819-78-9 REGISTRY
CN Cytidine, 2'-deoxy-7-methylguanylyl-(3'.fwdarw.5')-2'-deoxy-5-methyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 5'-Cytidylic acid, 2'-deoxy-5-methyl-, 5'.fwdarw.3'-ester with 2-amino-9-(2-deoxy-.beta.-D-erythro-pentofuranosyl)-6,9-dihydro-7-methyl-6-oxo-1H-purinium
MF C21 H30 N8 O10 P
LC STN Files: CA, CAPLUS

PAGE 1-A



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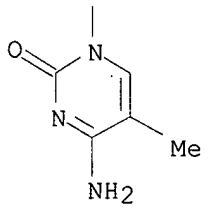

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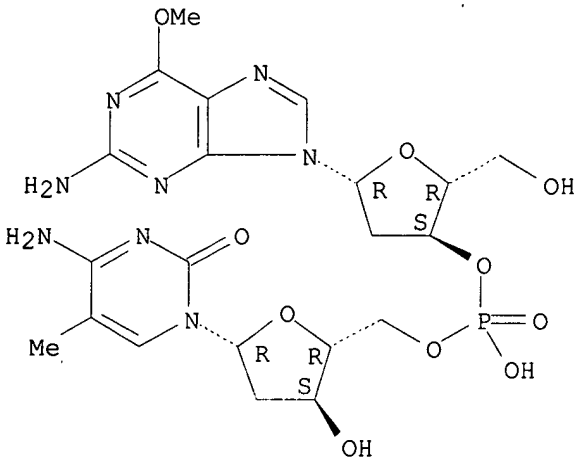
1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 98:211704

L19 ANSWER 4 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 85819-77-8 REGISTRY
CN Guanosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-2'-deoxy-6-O-methyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 5'-Cytidylic acid, 2'-deoxy-5-methyl-, 5'.fwdarw.3'-ester with 9-(2-deoxy-.beta.-D-erythro-pentofuranosyl)-6-methoxy-9H-purin-2-amine
FS STEREOSEARCH
MF C21 H29 N8 O10 P
LC STN Files: CA, CAPLUS

Absolute stereochemistry.



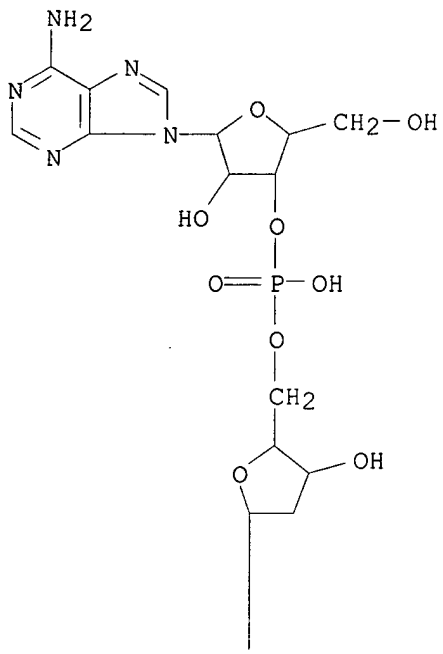
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 98:211704

L19 ANSWER 5 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 65676-46-2 REGISTRY
CN Cytidine, adenylyl-(3'.fwdarw.5')-2'-deoxy-5-methyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Adenosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-
MF C20 H27 N8 O10 P
LC STN Files: CA, CAPLUS

PAGE 1-A



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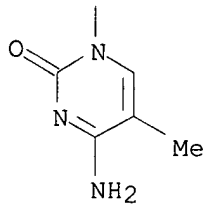

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3 REFERENCES IN FILE CA (1962 TO DATE)
3 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 107:232010

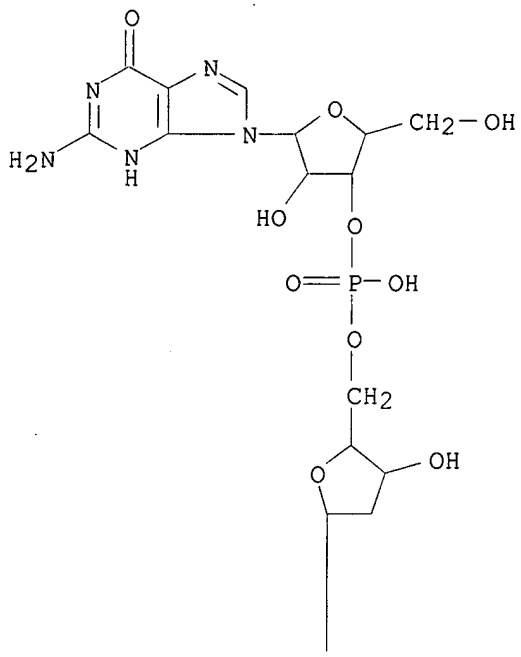
REFERENCE 2: 105:2613

REFERENCE 3: 88:100809

L19 ANSWER 6 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 65676-43-9 REGISTRY
CN Cytidine, guanylyl-(3'.fwdarw.5')-2'-deoxy-5-methyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Guanosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-
MF C20 H27 N8 O11 P

LC STN Files: CA, CAPLUS

PAGE 1-A



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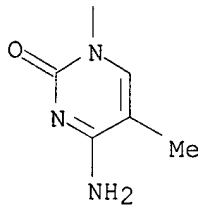


PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

2 REFERENCES IN FILE CA (1962 TO DATE)
2 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 107:232010

REFERENCE 2: 88:100809

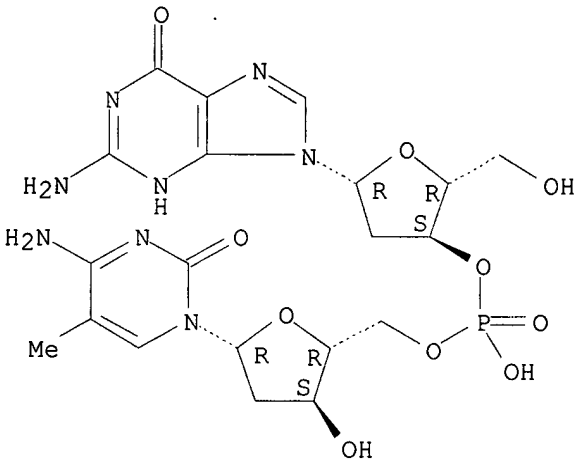
L19 ANSWER 7 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 53078-96-9 REGISTRY
CN Guanosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-2'-deoxy-, homopolymer (9CI) (CA INDEX NAME)
FS STEREOSEARCH
MF (C20 H27 N8 O10 P)x
CI PMS

PCT Polyother, Polyother only
LC STN Files: CA, CAPLUS, TOXCENTER

CM 1

CRN 53078-95-8
CMF C20 H27 N8 O10 P

Absolute stereochemistry.



7 REFERENCES IN FILE CA (1962 TO DATE)
7 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 114:181471

REFERENCE 2: 111:2886

REFERENCE 3: 107:196292

REFERENCE 4: 106:29492

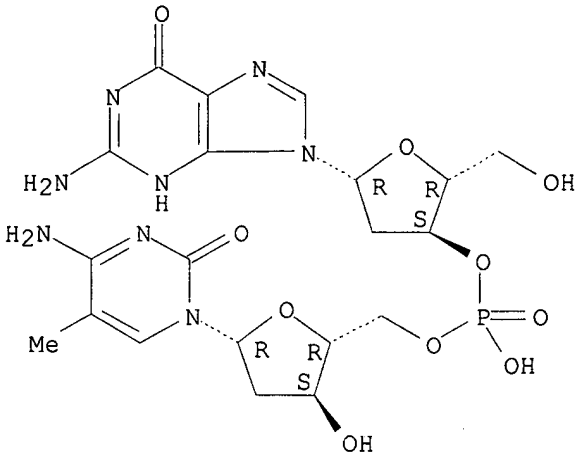
REFERENCE 5: 104:163844

REFERENCE 6: 99:189973

REFERENCE 7: 80:142016

L19 ANSWER 8 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 53078-95-8 REGISTRY
CN Cytidine, 2'-deoxyguanylyl-(3'.fwdarw.5')-2'-deoxy-5-methyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Guanosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-2'-deoxy-
FS STEREOSEARCH
MF C20 H27 N8 O10 P
CI COM
LC STN Files: CA, CAPLUS

Absolute stereochemistry.



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5 REFERENCES IN FILE CA (1962 TO DATE)
5 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 123:282316

REFERENCE 2: 120:70272

REFERENCE 3: 119:64805

REFERENCE 4: 111:36068

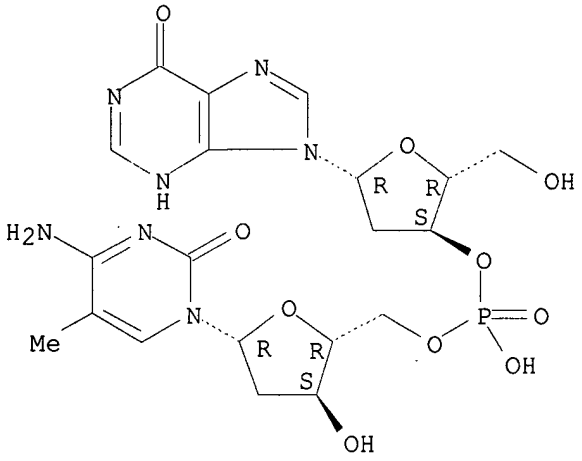
REFERENCE 5: 98:211704

L19 ANSWER 9 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 53078-94-7 REGISTRY
CN Inosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-2'-deoxy-, homopolymer (9CI) (CA INDEX NAME)
FS STEREOSEARCH
MF (C20 H26 N7 O10 P)x
CI PMS
PCT Polyother, Polyother only
LC STN Files: CA, CAPLUS

CM 1

CRN 53078-93-6
CMF C20 H26 N7 O10 P

Absolute stereochemistry.

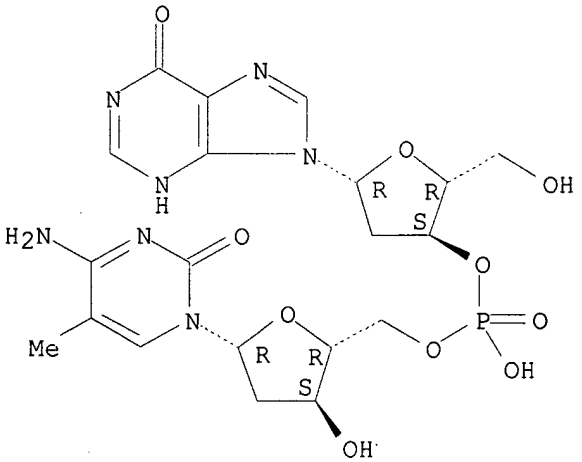


1 REFERENCES IN FILE CA (1962 TO DATE)
1 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE 1: 80:142016

L19 ANSWER 10 OF 10 REGISTRY COPYRIGHT 2002 ACS
RN 53078-93-6 REGISTRY
CN Cytidine, 2'-deoxyinosinylyl-(3'.fwdarw.5')-2'-deoxy-5-methyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Inosine, 2'-deoxy-5-methylcytidylyl-(5'.fwdarw.3')-2'-deoxy-
FS STEREOSEARCH
MF C20 H26 N7 O10 P
CI COM

Absolute stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT